CLAIMS

1. Method for depositing a dielectric material (1) on copper (15) apparent on the surface of a structure (10), entailing the following steps:

placing the structure (10) in a deposit chamber of CVD type (Chemical Vapour Deposition),

adding to the chamber a first gas forming a precursor for the formation of the dielectric material and containing an element able to contaminate copper,

adding to the chamber a second gas containing a chemical element intended, together with the element contained in the first gas and able to contaminate copper, to form said dielectric material (11), the second gas being able to react with the first gas to give the deposit of dielectric material (11),

performing the deposit of dielectric material from the first gas and the second gas,

characterized in that the method comprises a step for adding a third gas able to prevent the contamination of copper by said element contained in the first gas.

2. Method according to claim 1, characterized in that the deposit chamber enabling plasma assisted Chemical Vapour Deposition (PECVD), the method comprises a step for lighting the plasma to conduct the deposit of dielectric material from the first gas and the second gas.

3. Method according to either of claims 1 to 2, characterized in that the first gas is silane, the contaminating element being Si.

4. Method according to either of claims 1 or 2, characterized in that said chemical element of the second gas is nitrogen.

5. Method according to either of claims 1 or 2, characterized in that the second gas is nitrogen.

6. Method according to either of claims 1 or 2, characterized in that the third gas contains oxygen and/or nitrogen and/or carbon.

7. Method according to claim 6, characterized in that the third gas is chosen from the group made up of N_xO_y, C_xH_y, a xN_2+yH_2 mixture or a xO_2+yN_2 mixture.

8. Method according to claim 6, characterized in that the third gas is chosen from the group made up of NH_3, N_2O, CH_4 and C_2H_6.

9. Method according to either of claims 1 or 2, characterized in that the first, second and third gases are also added before lighting of the plasma, the flow rates of the first, second and third gases, the energy required for depositing and the time of formation of the deposit being adjusted in relation to the desired thickness of the dielectric material (11) and its desired physical properties.

10. Method according to claim 2, characterized in that the steps are conducted in the following order:

placing the structure (10) in the deposit chamber,

adding the third gas to the deposit chamber, the third gas being chosen to reduce the oxides present on the surface of the copper (15),

lighting a plasma of third gas in the deposit chamber in order to reduce said oxides,

adding the first and second gases to the deposit chamber, adjusting the flow rates of the first, second and third gases, the energy required for the deposit and the formation time of the deposit in relation to the desired thickness of the dielectric material (11) and its desired physical properties.

11. Method according to claim 10, characterized in that the third gas is ammonia.

12. Method according to either of claims 1 or 2, characterized in that, for the purpose of obtaining a dielectric material in SiN, the first gas is silane, said chemical element of the second gas is nitrogen and the third gas is ammonia.

13. Method according to any of claims 1 to 12, characterized in that the formation of the dielectric material (11) is made under a temperature of between 100 and 600°C.

14. Method for depositing a dielectric material (11) on copper (15) apparent on the surface of a structure (10), entailing the following steps:

placing the structure (10) in a deposit chamber of CVD type (Chemical Vapour Deposition),

adding to the chamber a gas forming a precursor for the formation of the dielectric material (11) and

containing a first element able to contaminate copper and a second element able to combine with the first element to give the dielectric material (11),

performing the deposit of dielectric material by combining the first element and the second element,

characterized in that the method comprises a step for adding an additional gas able to prevent the contamination of the copper by said element contained in the precursor gas.

15. Method according to claim 14, characterized in that the deposit chamber permitting plasma assisted Chemical Vapour Deposition (PECVD), the method comprises a plasma lighting stage to make the deposit of dielectric material from the precursor gas.

16. Method according to either of claims 14 or 15, characterized in that, in order to obtain a dielectric material in SiC, said gas forming a precursor is trimethylsilane.

17. Application of the method according to any of the preceding claims to the depositing of a copper-diffusion barrier layer on the surface of a structure (10) containing at least one conductor line in copper (15).

18. Application of the method according to any of claims 1 to 16 for the depositing of copper-diffusion barrier layers at the time of fabricating interconnection levels in copper on semiconductor devices.